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Industry Standard, Flexible Architecture

GREEN

Less Heat, Less Power Consumption

STABLE

Robust Design, Quality Parts

Stable and
Reliable Solution

Barebone

1U12L Series

1U12LW-C2750

1U12LW-C2550

1U12L2SW-14S

User Manual



Version 1.0

Published December 2013

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This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) this device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

CALIFORNIA, USA ONLY

The Lithium battery adopted on this motherboard contains Perchlorate, a toxic substance controlled in Perchlorate Best Management Practices (BMP) regulations passed by the California Legislature. When you discard the Lithium battery in California, USA, please follow the related regulations in advance.

“Perchlorate Material-special handling may apply, see www.dtsc.ca.gov/hazardouswaste/perchlorate”

ASRockRack's Website: www.ASRockRack.com

Setting up the Server in a Restricted Access Location

- Access can only be gained by service persons or by users who have been instructed about the reasons for the restrictions applied to the location and about any precautions that shall be taken.
- Access is through the use of a tool or lock and key, or other means of security, and is controlled by the authority responsible for the location.
- Leave enough clearance (25 inches in the front and 30 inches in the back of the rack) to allow the front door to be opened completely and to allow for sufficient airflow.
- This product is for installation merely in a Restricted Access Location.
- This product is not suitable for use with visual display work place devices according to §2 of the the German Ordinance for Work with Visual Display Units.

Replaceable Batteries

CAUTION

**RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE.
DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS**

Important Safety Instructions

Pay close attention to the following safety instructions before performing any of the operation. Basic safety precautions should be followed to protect yourself from harm and the product from damage:

- Operation of the product should be carried out by suitably trained, qualified, and certified personnel only to avoid risk of injury from electrical shock or energy hazard.
- Disconnect the power cord from the wall outlet when installing or removing main system components, such as the motherboard and power supply unit.
- Place the system on a stable and flat surface.
- Use extreme caution when working with high-voltage components.
- When handling parts, use a grounded wrist strap designed to prevent static discharge.
- Keep the area around the system clean and clutter-free.
- Keep all components and printed circuit boards (PCBs) in their antistatic bags when not in use.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or contacts.

Contact Information

If you need to contact ASRockRack or want to know more about ASRockRack, you're welcome to visit ASRockRack's website at www.ASRockRack.com; or you may contact your dealer for further information.

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Chapter 1 Introduction

Thank you for purchasing 1U12L Series, a reliable barebone system produced under ASRockRack's consistently stringent quality control. It delivers excellent performance with robust design conforming to ASRockRack's commitment to quality and endurance.



Because the hardware specifications might be updated, the content of this documentation will be subject to change without notice. In case any modifications of this documentation occur, the updated version will be available on ASRockRack's website without further notice. If you require technical support related to this product, please visit our website for specific information about the model you are using.

ASRockRack's Website: www.ASRockRack.com



The illustrations shown in this manual are examples only, the actual system may differ slightly.

1.1 Shipping Box Contents

- 1U12L Series Barebone (1U form factor)
- System Board
- Power Supply Unit (pre-installed)
- System Fans x 5 (pre-installed)
- HDD Backplanes x 3 (pre-installed)
- Front Panel Board x1 (pre-installed)
- Chassis Cables*
- Screws x 74
- User Manual
- Quick Installation Guide

* Type and quantity may vary depending on the server board that comes with your system.



If any items are missing or appear damaged, contact your authorized dealer.

1.2 Specifications

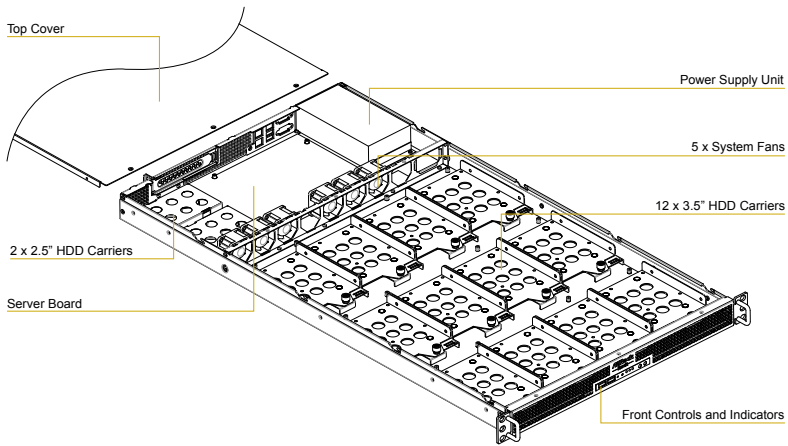
1U12L Series	
System Physical Status	
Form Factor	1U Rackmount
Dimension (D x W x H)	31.9" x 16.9" x 1.7" (810 X 430 X 43.5 mm)
Support MB Size	Extend Mini ITX
Front Panel	
Buttons	• Power On/Standby button • UID button* • System reset button • NMI button*
LEDs	• Power LED • Identification LED* • Hard drive activity LED* • 2x Network activity LEDs*
I/O Ports	2 x USB 2.0 ports
Drive Bay	
Internal	• 12 x 3.5" SATA HDDs (6Gb/s) • 2 x 2.5" SATA HDDs (6Gb/s)*
System Cooling	
Fan	6 x 40*56mm system fans
Power Supply	
Capacity	1U, Single
Output Watts	250 W Bronze/ 450 W Gold*

**Please be noted that the functions are supported depending on the type of the server board.*

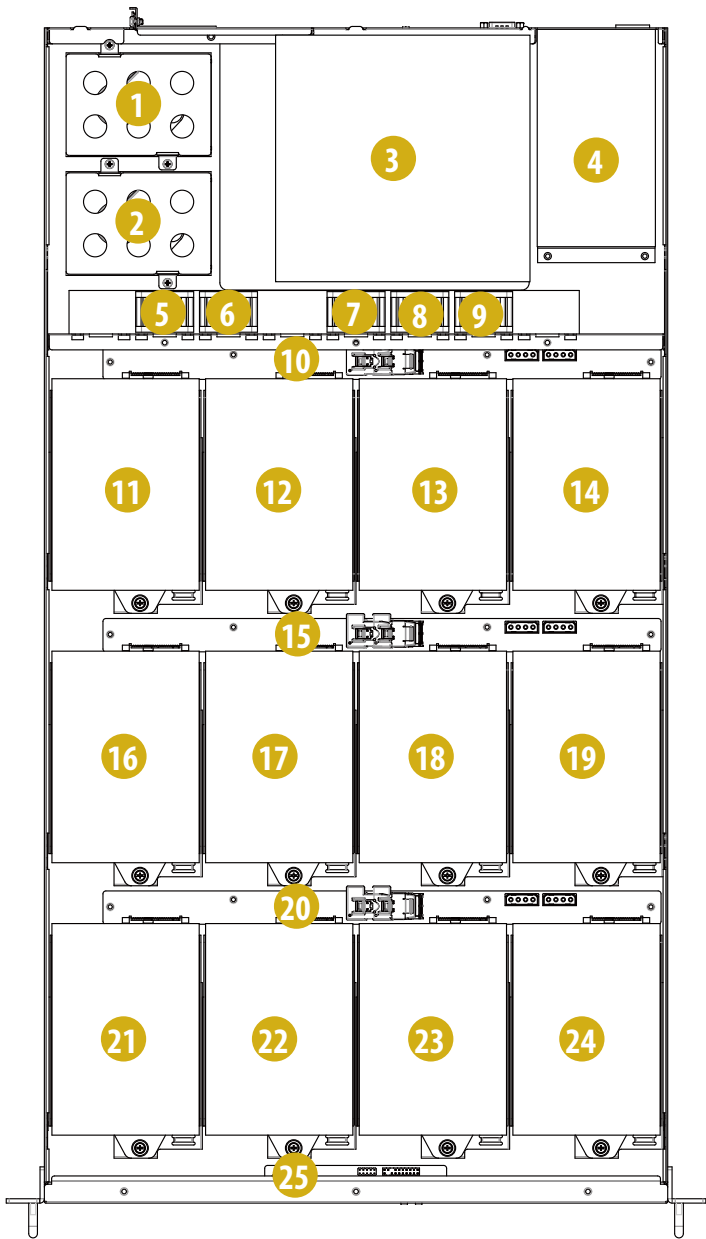
Chapter 2 Server System Overview

This chapter provides diagrams showing the location of important components of the server system.

2.1 System Components



2.2 Cable Connections



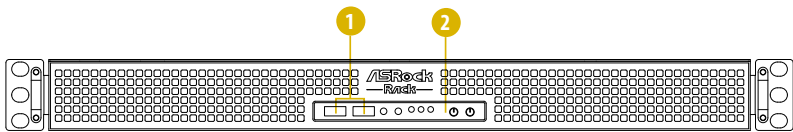
No.	From	To	Cable*
1	2.5" HDD 1	SB / PSU	Power supply cable
2	2.5" HDD 2	SB / PSU	Power supply cable
3	Server Board (SB)		
4	Power Supply Unit (PSU)	SB / BP1~3	Power supply cables
5	System Fan 5	SB	Fan cable
6	System Fan 4	SB	Fan cable
7	System Fan 3	SB	Fan cable
8	System Fan 2	SB	Fan cable
9	System Fan 1	SB	Fan cable
10	HDD Backplane 1 (BP1)	SB PSU	MiniSAS to SATA cable 1 Power supply cables
11	3.5" HDD 0	BP1	N/A
12	3.5" HDD 1	BP1	N/A
13	3.5" HDD 2	BP1	N/A
14	3.5" HDD 3	BP1	N/A
15	HDD Backplane 2 (BP2)	SB PSU	MiniSAS to SATA cable 2 Power supply cables
16	3.5" HDD 4	BP2	N/A
17	3.5" HDD 5	BP2	N/A
18	3.5" HDD 6	BP2	N/A
19	3.5" HDD 7	BP2	N/A
20	HDD Backplane 3 (BP3)	SB PSU	MiniSAS to SATA cable 3 Power supply cables
21	3.5" HDD 8	BP3	N/A
22	3.5" HDD 9	BP3	N/A
23	3.5" HDD 10	BP3	N/A
24	3.5" HDD 11	BP3	N/A
25	Front Panel Board (FPB)	SB	Front panel cable USB cable

*Only supplied cables are mentioned in this table.



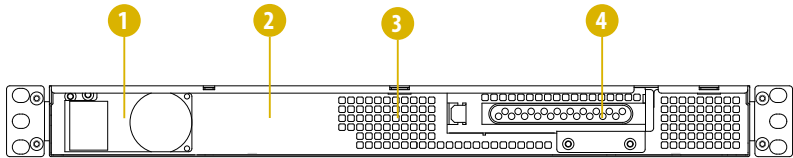
Connections and cable routing may differ depending on various server boards. Please refer to the Quick Installation Guide to know the exact headers or cables to be connected on the server board you purchase. For more detailed information about server board components, refer to the manual that comes with your server board.

2.3 System Front Panel



No.	Description
1	2 x USB 2.0 Ports
2	Control Panel Buttons and LEDs

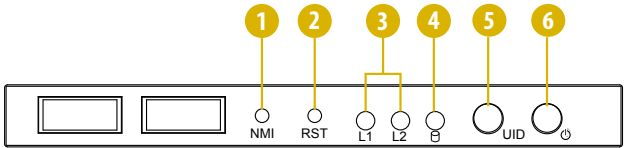
2.4 System Rear Panel



No.	Description
1	Power Supply Unit
2	I/O Shield (depends on the specification of the server board)
3	Rear Vent
4	1 x PCI Express Slot (for the riser card)

2.5 Front Control Panel Buttons and LEDs

Front Control Panel



No.	Description
1	NMI (Nonmaskable Interrupt) Button*
2	System Reset Button
3	LAN1, LAN2 Activity LED*
4	HDD Status LED*
5	UID Button and LED*
6	Power Button and LED

**Please be noted that the functions are supported depending on the type of the server board.*

NMI (Nonmaskable Interrupt) Button

Press the NMI button with a paper clip or pin to generate a nonmaskable interrupt and to put the server in a halt state for examination.

System Reset Button

When the system is completely unresponsive, press the system reset button to reboot the server without shutting it off and initialize the system.

UID Button

Press the UID button to toggle the front panel UID LED and the baseboard UID LED on and off. You are able to locate the server you're working on from behind a rack of servers.

Power Button

Press the power switch button to toggle the system power on and standby/sleep modes.

To remove all power from the system completely, disconnect the power cord from the server.

Status LED Definitions

Power LED	
Status	Description
Green	Power on
Blinking Green	Standby(Sleep) mode
Off	Power off

UID LED	
Status	Description
Blue	System identification is active.
Off	System identification is disabled.

HDD Status LED	
Status	Description
Green	HDD access
Off	HDD idle

LAN1, LAN2 LED	
Status	Description
Green	Link between system and network or no access
Blinking Green	Network access

Chapter 3 Hardware Installation and Maintenance

This chapter helps you assemble the chassis and install components.

Before You Begin

Before you work with the server, pay close attention to the “Important Safety Instructions” at the beginning of this manual.

1. Make sure the server is powered off.

Power down the server if it is still running.

- (1) Press the Power button to power off the server from full-power mode to standby-power (sleep) mode. The Power LED at the front turns from solid green to blinking green.
- (2) Disconnect the power cord first from the AC outlet and then from the server.
The power LED turns off.



The server is not completely powered down when you press the Power button on the front panel. The Power button lets the server toggle between Power On and Standby (Sleep) modes. Some internal circuitry remain active in the Standby mode. To remove all power from the system completely, be sure to disconnect the power cord from the server.

2. Ensure you have a clean and stable working environment. Avoid dust and dirt because contaminants may cause malfunctions.
3. Ground yourself properly before touching any system component. A discharge of static electricity may damage components. Wear a grounded wrist strap if available.

Installing Procedures

The followings are prerequisite to be installed.

- 3.5" or 2.5" HDD(s)
- Power Supply (Pre-installed)
- Server Board (Pre-installed)
- Fans (Pre-installed)
- HDD Backplanes (Pre-installed)

An add-on card is optional to be installed when you have a riser board intalled on your server board.



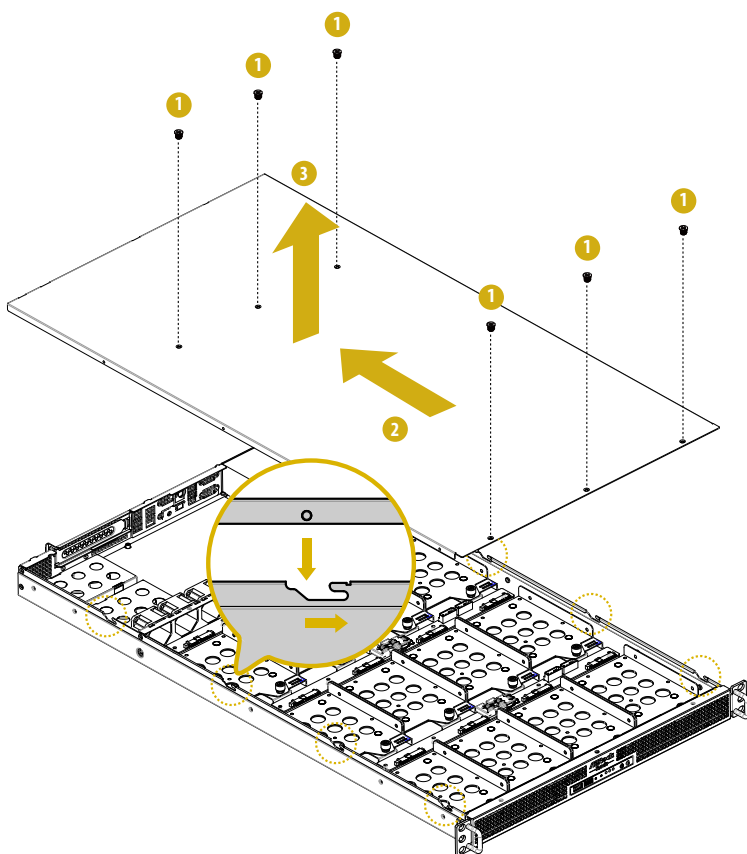
1. Some components are already pre-installed. Simply properly connect the relavant cables before or after installation. See the Quick Installation Guide for more details.
2. Refer to the user manual of the server board you use for instructions on how to install server board components.

3.1 Server Top Cover

Removing the Server Top Cover

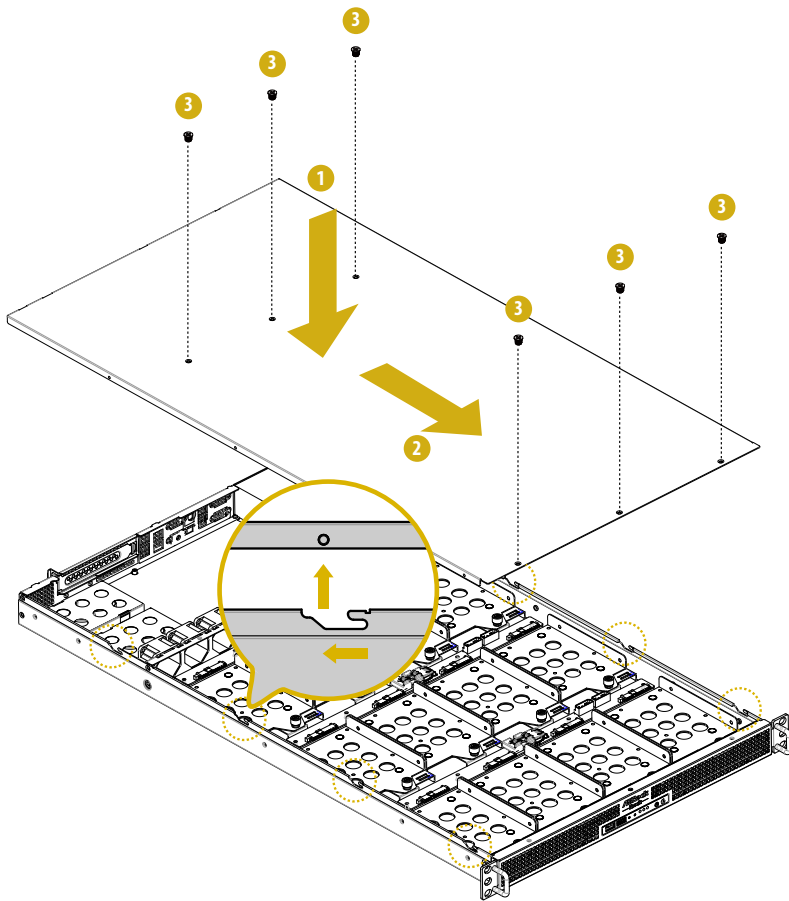


1. Before removing the top cover, power off the server and unplug the power cord.
2. The system must be operated with the chassis top cover installed to ensure proper cooling.



1. Remove the six screws that secure the top cover to the chassis.
2. Push the top cover toward the rear of the chassis to remove the cover from the locked position.
3. Lift up and remove the top cover.

Installing the Server Top Cover



1. Lower the top cover on the chassis, making sure the side latches align with the cutouts.
2. Slide the top cover toward the front.
3. Secure the top cover with the six screws.

3.2 Hard Drive

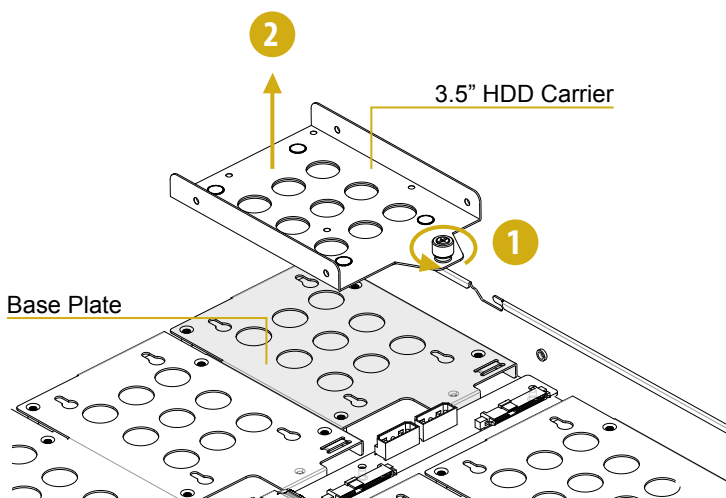
3.2.1 Installing a Hard Disk Drive into 3.5" Hard Drive Carrier



*This system allows the routing of cables behind the HDD base plate and carriers. Be sure to connect all required cables first **before** installing any of the 3.5" HDDs. Meanwhile, please well organize your cables and be careful with your cable routing. You can refer to the Quick Installation Guide for more information.*

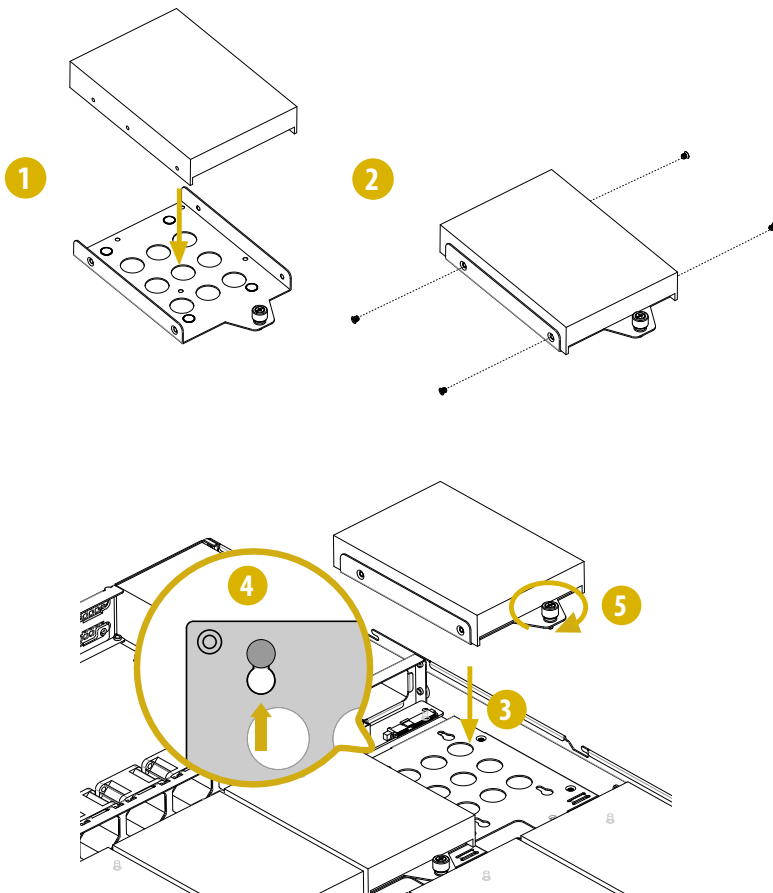
Removing a 3.5" Hard Drive Carrier from the Chassis

1. Release the thumb screw that secures the hard drive carrier to the base plate.
2. Lift up and remove the carrier from the base plate.



Installing a 3.5" Hard Drive to the Hard Drive Carrier

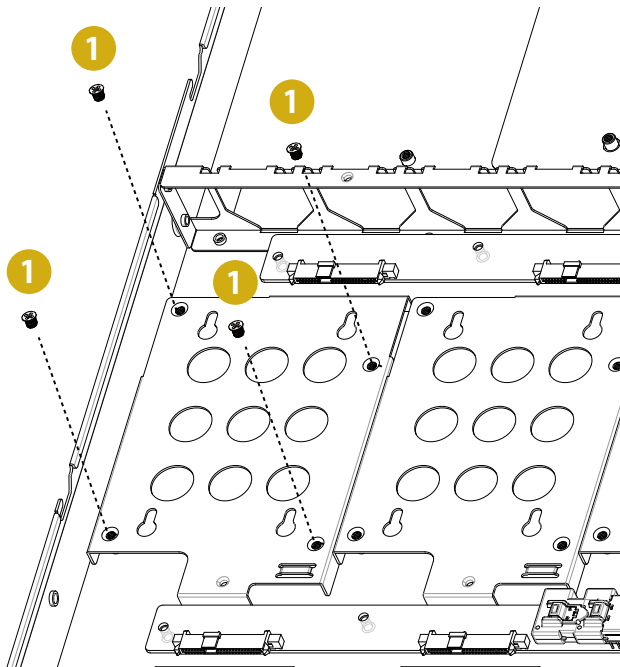
1. Place the 3.5" HDD into the carrier with the printed circuit board side facing down. Carefully align the mounting holes in the hard drive and the carrier.
2. Secure the hard drive using the four screws.
3. Place the hard drive carrier on the base plate with the thumb screw facing the front of the chassis.
4. Align the keyhole openings on the base with the locating pins on the bottom of the hard drive carrier. Pull the hard drive carrier toward the rear of the chassis until the carrier clips.
5. Tighten the thumb screw on the carrier to secure the hard drive carrier to the base plate.



Removing a Hard Disk Drive Base Plate from the Chassis

Organize your cables and place them under the hard drive base plates before installing 3.5" HDDs.

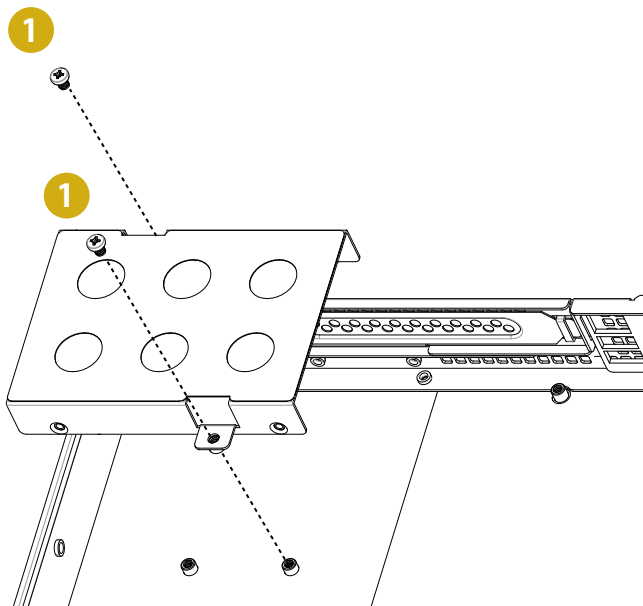
1. Remove the screws that secure the hard drive base plate.



3.2.2 Installing a Hard Disk Drive into 2.5" Hard Drive Carrier

Removing 2.5" Hard Drive Carriers from the Chassis

1. Remove the screws that secure the 2.5" hard drive carrier.

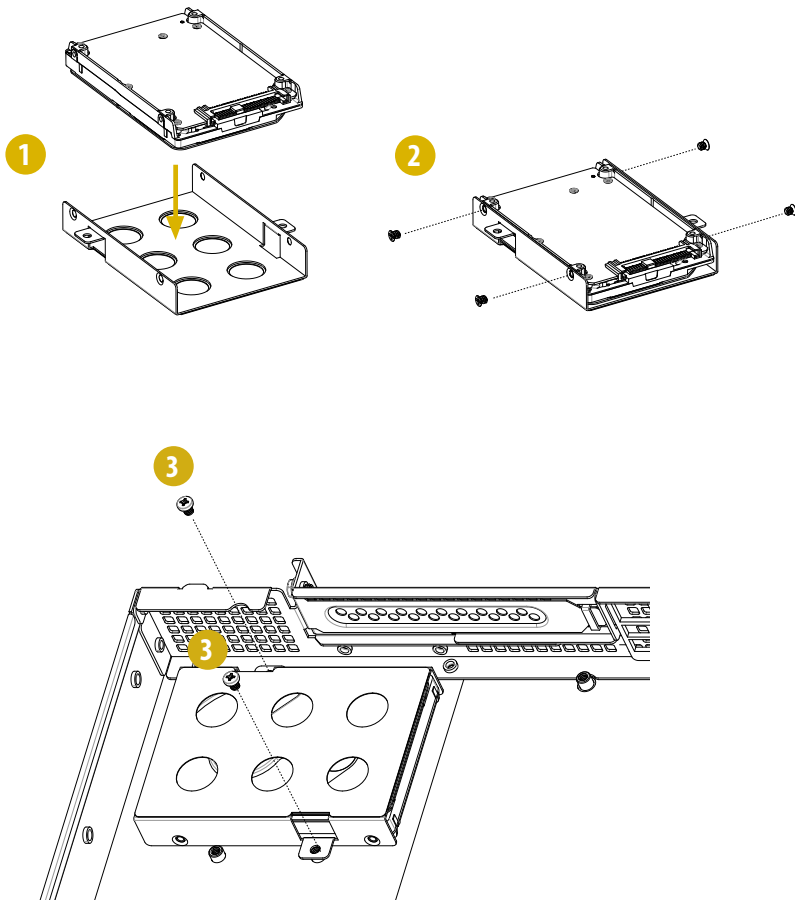


Installing a 2.5" Hard Drive to the Hard Drive Carrier

1. Place a 2.5" HDD into the carrier with the label facing up and the connector end toward the server board.

Carefully align the mounting holes in the hard drive and the carrier.

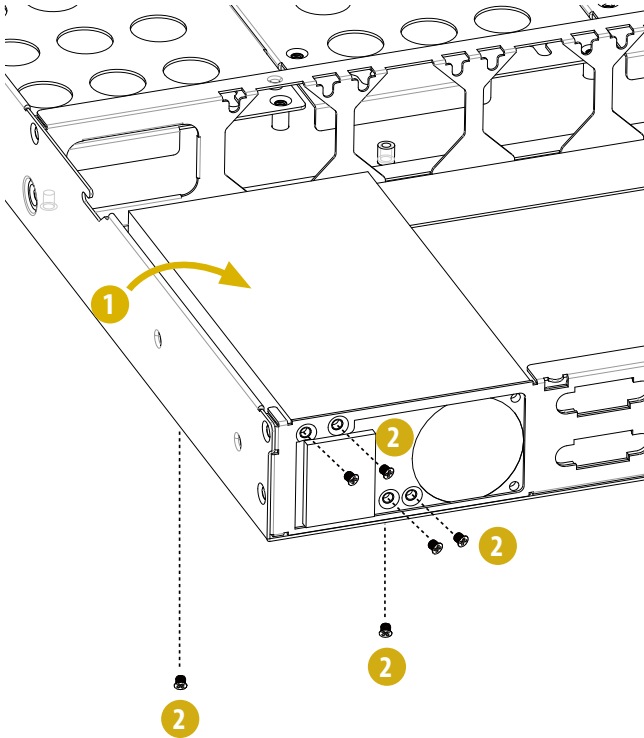
2. Secure the hard drive using the four screws.
3. Place the drive carrier back to the chassis with screw holes aligned. Secure each drive carrier with the two screw.



3.3 Power Supply

Installing and Removing the Power Supply

1. Place the power supply unit in the chassis with the fan facing right.
2. Align the mounting screw holes and secure the power supply unit with the six screws.
3. Reverse the procedure to remove the power supply.



Before replacing the power supply, power off the server, unplug the power cord, and disconnect all wiring from the power supply.

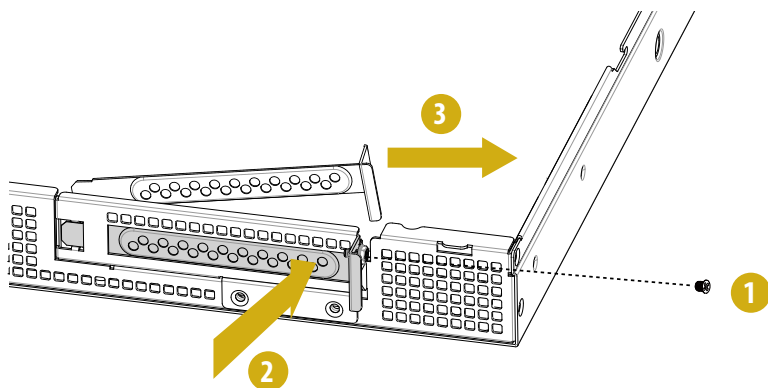
3.4 Add-on Card



1. You can install an add-on card to the chassis only when you have a riser card installed on the server board.
2. Before installing the add-on card, power off the server and unplug the power cord.

Removing the Blanking Plate from the Chassis

1. Remove the screw securing the blanking plate on the chassis. Keep this screw for later use.
2. Push the the right end of the blanking plate toward the chassis.
3. Slide the blanking plate out sideways.

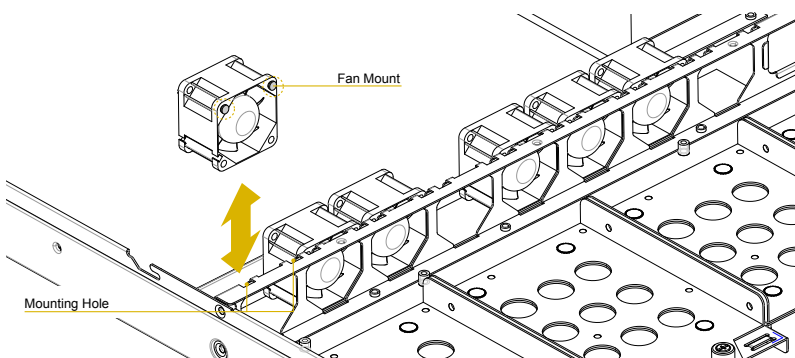


4. Reverse the procedure to install the add-on card in the chassis.

3.5 System Fan

Replacing the System Fan

1. Unplug the fan connector and remove the failed fan.
2. Align the mounting holes on the fan bar with the fan mounts on the replacement fan corners.
3. Gently place the fan on the fan bar. Make sure the fan is well seated.
4. Connect the end of the fan cable to the fan connector.



3.6 Backplane

Each barebone system supports three 3.5-inch HDD backplanes. The miniSAS/SATA backplanes serve as the interfaces between the server board and the HDDs.



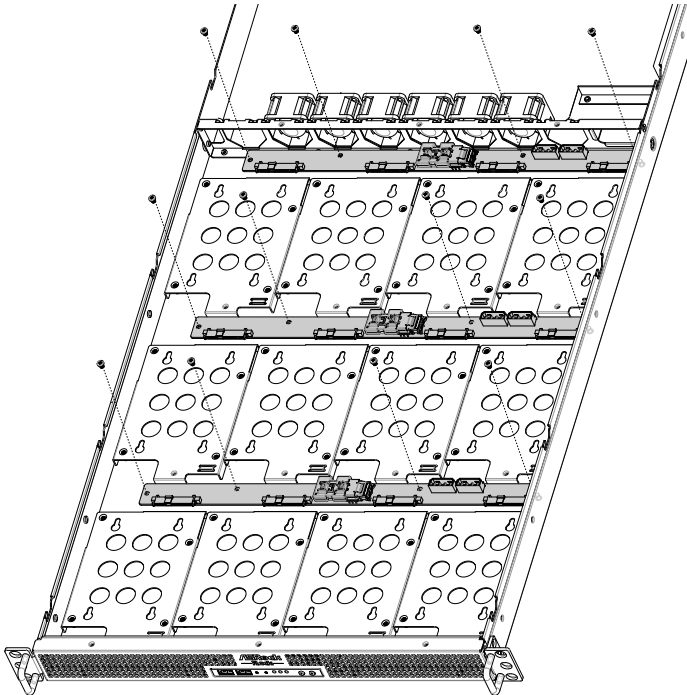
Before removing and installing the backplanes, power off the server and unplug the power cord and make sure all 3.5" HDDs have been removed.



For the specification of the backplane, please refer to the Chapter 4.

Removing the Backplanes

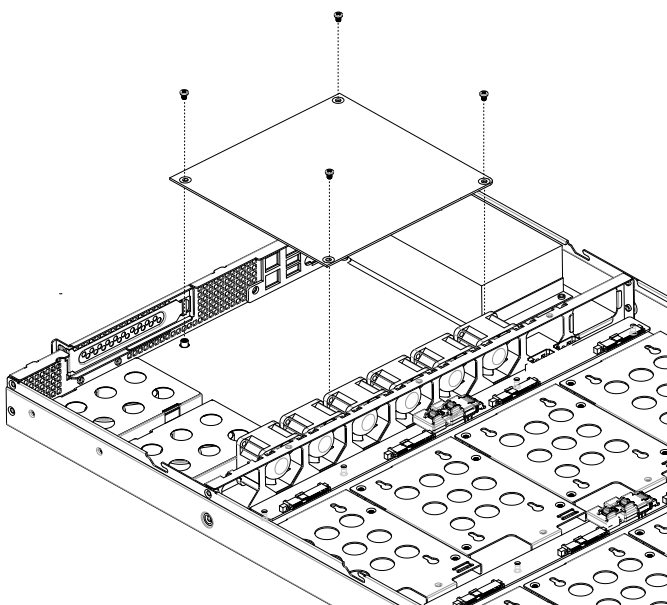
1. Remove all of cables connected to the backplanes.
2. Loosen the securing screws on the backplanes.
3. Lift the backplanes up from the chassis. Hold the backplanes only by the edges.



3.7 Server Board

Follow the steps below to install the server board to the chassis.

1. Hold the server board only by the edges.
2. Gently place the server board into the chassis. Sit the server board on the server board tray.
3. Position the server board in the server system. Align mounting holes of the server board to the standoff on the chassis.
4. Affix the screws clockwise into the mounting holes in all of the corners of the server board.



1. Do not over-tighten the screws! Doing so may damage the server board.
2. Refer to the user manual of the server board you use for instructions on how to install and remove the server board components and how to use its setup utility.

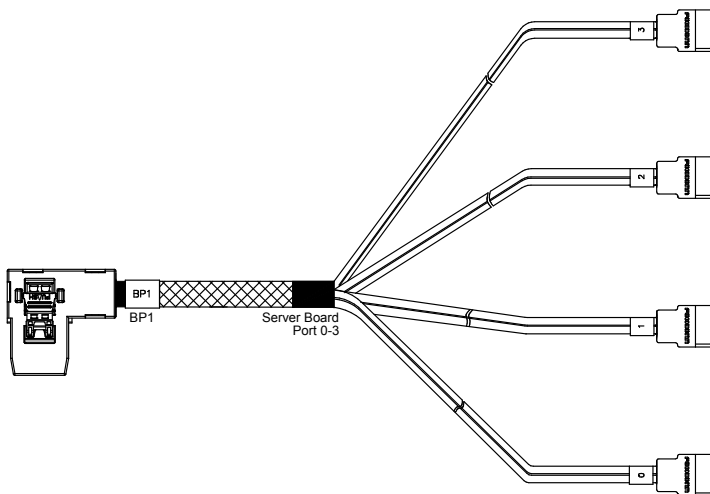
3.8 Chassis Cables

This section lists supported cables for your chassis system.

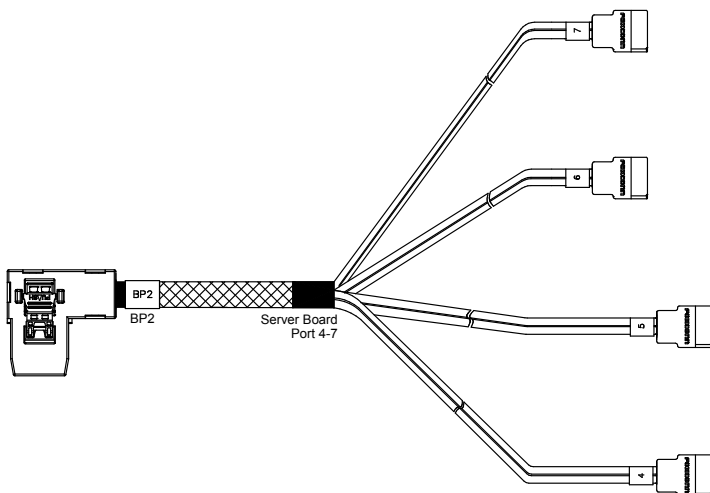


Cable type and quantity vary depending on the server board that comes with your system.

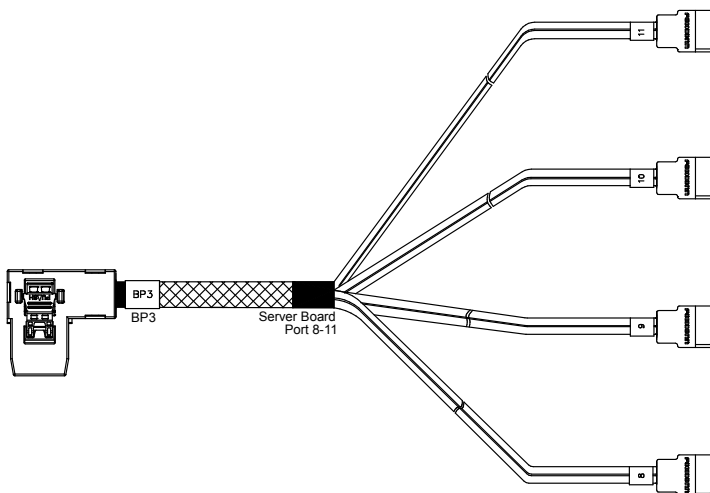
1. MiniSAS to SATA Cable 1 (400mm) (Quantity: 1)



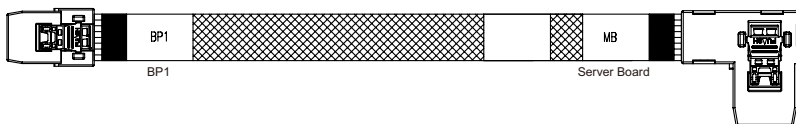
2. MiniSAS to SATA Cable 2 (550mm) (Quantity: 1)



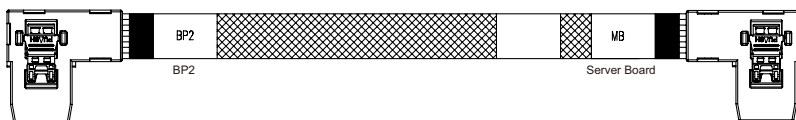
3. MiniSAS to SATA Cable 3 (600mm) (Quantity: 1)



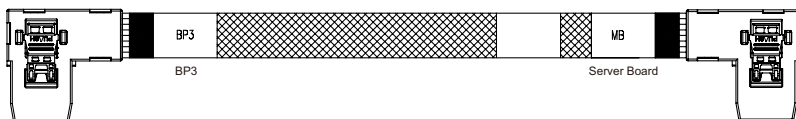
4. MiniSAS to MiniSAS Cable 1 (120mm) (Quantity: 1)



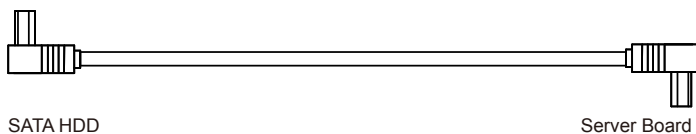
5. MiniSAS to MiniSAS Cable 2 (300mm) (Quantity: 1)



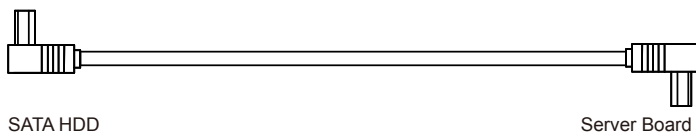
6. MiniSAS to MiniSAS Cable 3 (480mm) (Quantity: 1)



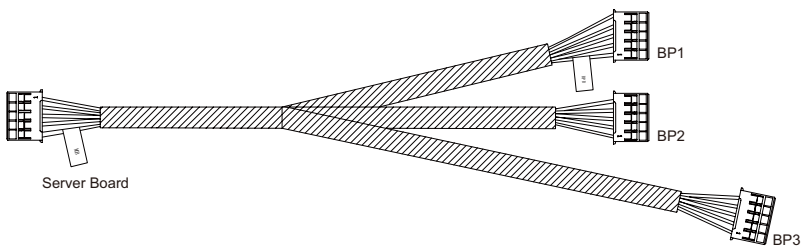
7. SATA Cable 1 (350mm) (Quantity: 1)



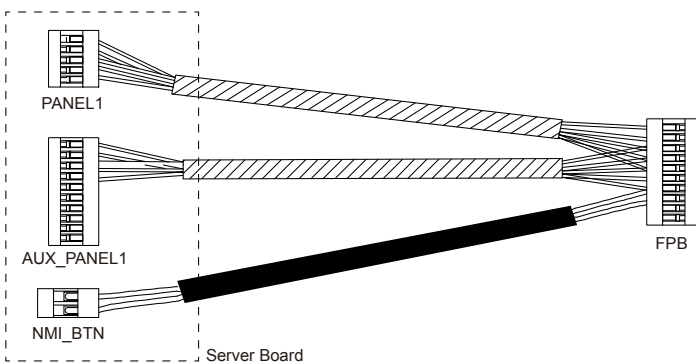
8. SATA Cable 1 (500mm) (Quantity: 1)



9. SMBus Cable (150/150/300mm) (Quantity: 1)



10. Front Panel Cable (1000mm) (Quantity: 1)*

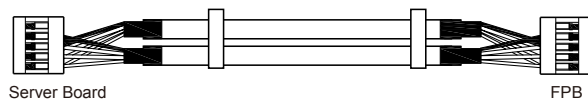


*The NMI function is not supported for the 1U12L Series.

11. Fan Cable (70mm) (Quantity: 1)



12. USB Cable (1000mm) (Quantity: 1)



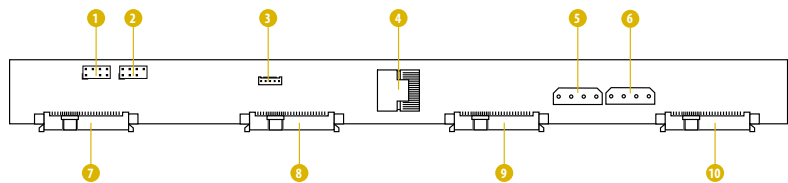
1. Remove all 3.5" HDDs carriers when you are going to connect various components with cables.
2. Conenctions and cable routing may differ depending on various server boards. Please refer to the Quick Installation Guide to know the exact headers or connectors to be connected on the server board you purchase. For more detailed information about server board components, refer to the manual that comes with your server board.

Chapter 4 Backplane Specifications

Hard Drive Backplanes (BP) (to connect 4x3 3.5" HDDs)

1U12LIW-BPB1 / 1U12LIW-BPB2 / 1U12LIW-BPB3

Top View

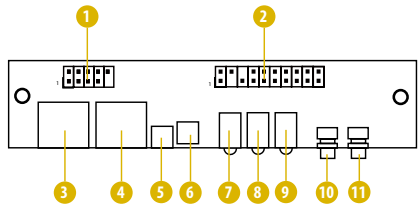


No.	Description
1	I2C Address Settings (J2)
2	SGPIO Code Programming Pin
3	BMC SMBus Connector (BMC_SMB)
4	Mini-SAS Connector
5	DC Power Connector (DC-IN 1)
6	DC Power Connector (DC-IN 2)
7	SATA Hot-swap Connector 1
8	SATA Hot-swap Connector 2
9	SATA Hot-swap Connector 3
10	SATA Hot-swap Connector 4

Front Panel Board (FPB)

1U12LIW-FPB1

Top View

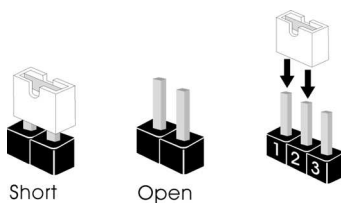


No.	Description
1	USB Header (USB_Header)
2	Front and Auxiliary Panel Header (Front + AUX Panel)
3	Front USB 2.0 Connector (Front_USB_1)
4	Front USB 2.0 Connector (Front_USB_2)
5	NMI Button (CON2)
6	System Reset Button (CON1)
7	LAN 1 Activity LED* (LED2)
8	LAN 2 Activity LED* (LED3)
9	HDD Activity LED* (LED1)
10	ID Button and LED* (U2)
11	Power Button and LED (U3)

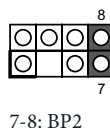
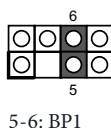
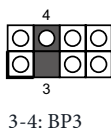
**Please be noted that the functions are supported depending on the type of the server board.*

Jumper Setup

The illustration shows how jumpers are setup. When the jumper cap is placed on the pins, the jumper is “Short”. If no jumper cap is placed on the pins, the jumper is “Open”. The illustration shows a 3-pin jumper whose pin1 and pin2 are “Short” when a jumper cap is placed on these 2 pins.

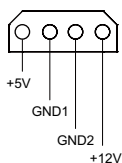


I2C Address Setting
Jumper for BP
(7-pin J2)
(see p.26, No. 1)



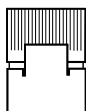
Pin Definitions

DC Power Connector
(DC-IN1)
(DC-IN2)
(see p.26, No. 5, 6)



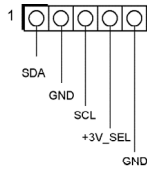
The 4-pin connectors
provide power to the
backplane.

Mini-SAS Connector
(see p.26, No. 4)



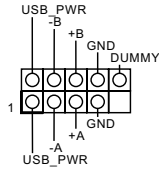
This connector is used
to connect RAID card or
the mini-SAS port on the
motherboard.

SMB Connector
(5-pin BMC_SMB1)
(5-pin BMC_SMB2)
(5-pin BMC_SMB3)
(see p.26, No. 3)



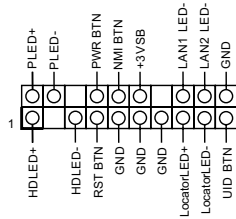
The SMB (SubMiniature version B) connector provides a communication interface between the backplane and the motherboard.

USB 2.0 Header
(9-pin USB_HEADER)
(see p.27, No. 1)



The header supports two USB 2.0 ports on the front panel.

Front and Auxiliary Panel Header
(17-pin FRONT + AUX PANEL)
(see p.27, No. 2)



This header supports multiple functions on the front panel.

Appendix A Installing the Server in a Rack

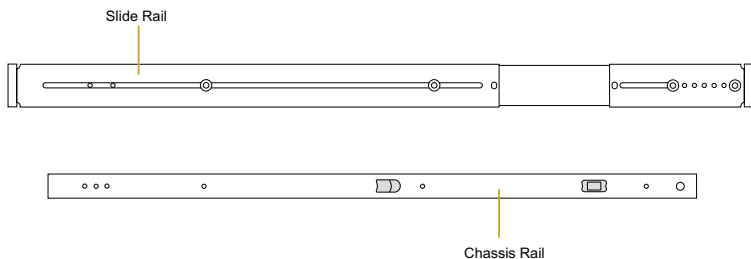
This section describes how to rackmount the 1U12L Series server with slide rail assemblies.



The rails installation instructions in this manual are example only, your actual rail assembly procedure may differ slightly.

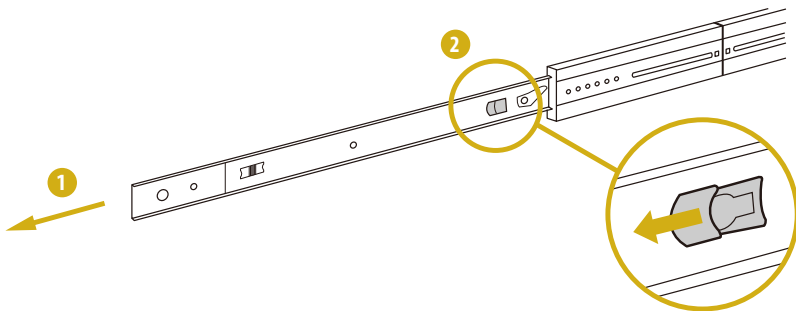
The slide rail assembly consists of a chassis rail and a slide rail.

You need to attach the chassis rails to the server and attach the slide rail assemblies to the rack.



Removing the Chassis Rail from the Slide Rail Assembly

1. Pull out the inner chassis rail from the rail assembly.
2. Push the white chassis rail release button toward the front, and simultaneously withdraw the chassis rail from the slide rail assembly.
3. Repeat for the remaining rail assembly.

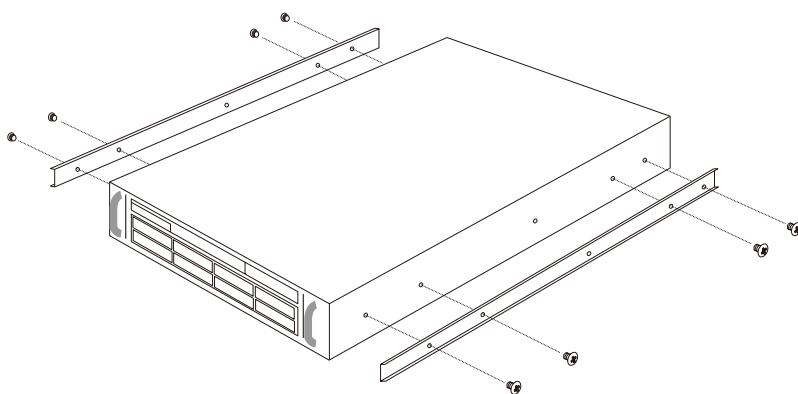




To slide a chassis rail back into the slide rail assembly, push the blue release button toward the rear, and simultaneously slide the chassis rail into the slide rail assembly until it is locked and cannot be pushed further.

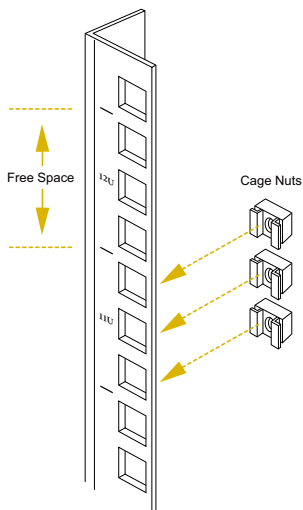
Attaching the Chassis Rails to the Server

1. Position a chassis rail along one side of the chassis, and align the keyhole openings on the chassis rail with the locating pins on the side of the chassis.
2. Pull the chassis rail toward the front of the chassis until the chassis rail clips. Make sure the rail is installed in the correct direction.
3. Secure the chassis rail to the server chassis with screws.
4. Repeat for the remaining chassis rail.

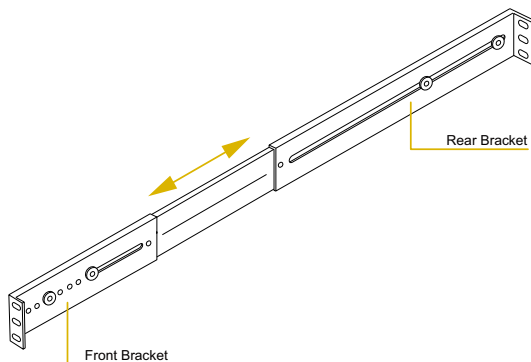


Attaching the Slide Rail Assemblies to the Rack

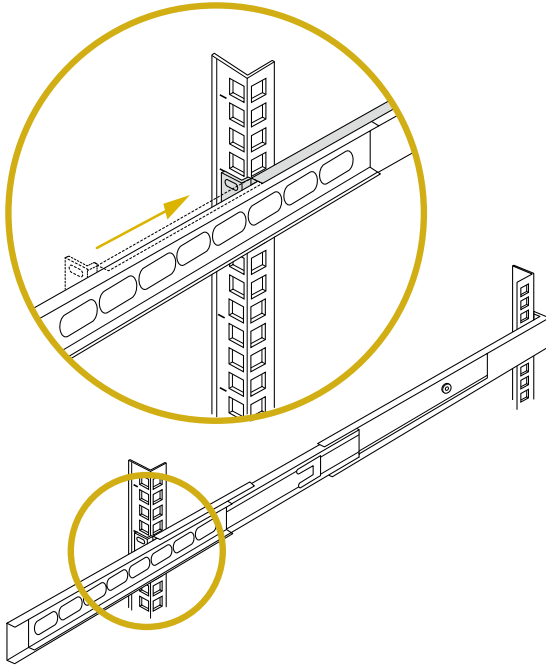
1. Determine where to attach the slide rails. Make sure you have three holes of free space above the slide rail bracket.
2. For the rack with square mounting holes, insert cage nuts in the holes that you will use on the rack.



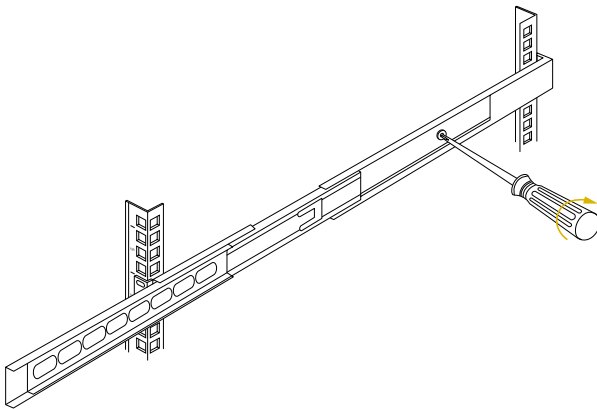
3. Extend the pre-attached front and rear adjustable brackets on the slide. Do not fully tighten the nuts yet.



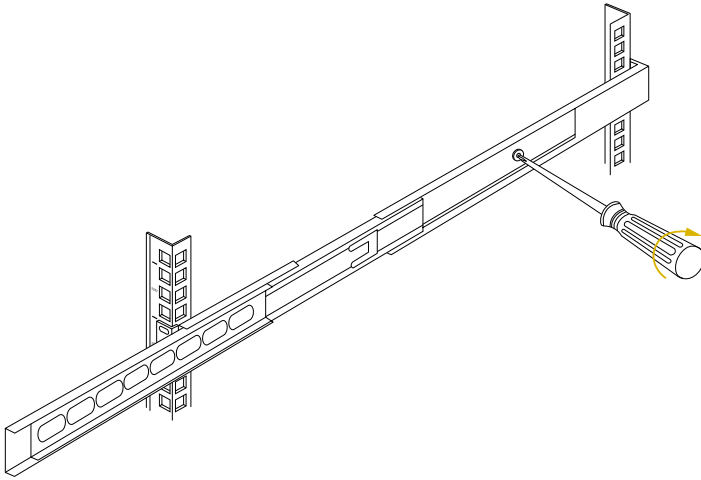
4. Adjust the brackets to accommodate the depth of the rack.



5. Align the holes on the brackets with the mounting holes you selected on the rack.
6. Tighten the screws to secure the slide rails to the rack. Make sure the rear bracket meets the rear vertical rail of the rack.

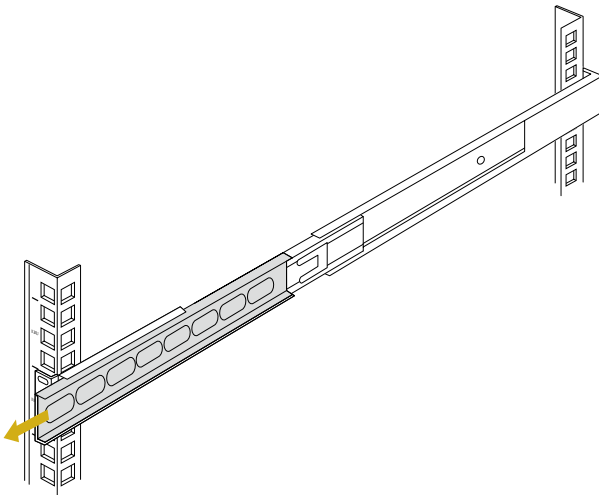


7. Fully tighten the lock nuts on the rear bracket.



Sliding the Server into the Rack

1. Ensure that the slide rails are properly and securely attached to the rack.
2. Fully extend the slide rails from the rack by pulling the inner rails out until they are locked and cannot be pulled out further.

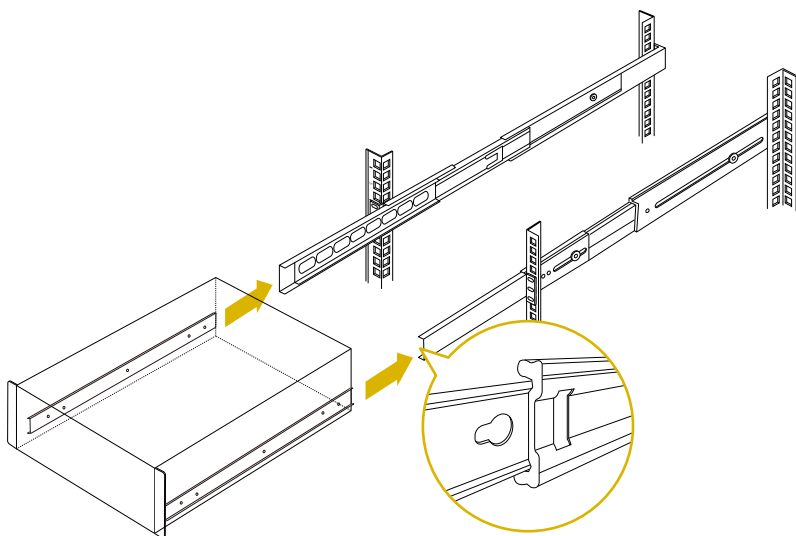


To slide an inner rail back into the slide rail, press the metal tab on the inner rail, and simultaneously slide the inner rail into the slide rail.

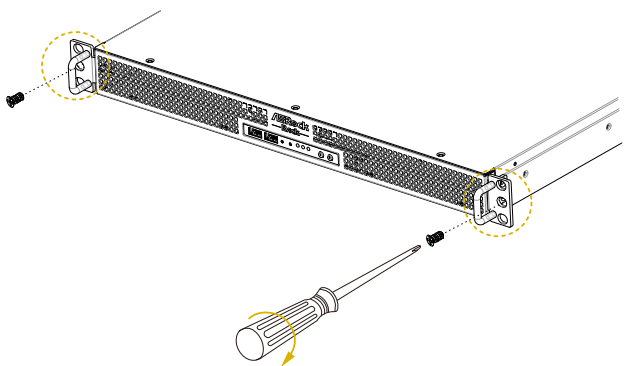
- Slide the server slowly and evenly all the way into the cabinet to ensure that the slide assemblies are working correctly.



The server is heavy. For safe lifting, two or more persons are required to install the server into the rack.



- Secure the server to the rack with screws.
- To remove the server from the rack, reverse these instructions.



When connecting cables to the server, make sure there is enough cable slack so you can slide the server in and out of the rack without accidentally unplugging a cable.